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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,884	03/01/2002	Dominique Hamoir	Q68485	8179
7590 07/27/2006 SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC 2100 Pennsylvania Avenue, N.W. Washington, DC 20037-3213			EXAMINER LEUNG, CHRISTINA Y	
			ART UNIT 2613	PAPER NUMBER

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/084,884

Applicant(s)

HAMOIR ET AL.

Examiner

Christina Y. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 May 0206.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-13 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-3 are rejected under 35 U.S.C. 102(a) as being anticipated by Grubb et al. (WO 00/49721 A2; Corvis Corporation, assignee).

Regarding claim 1, Grubb et al. disclose a WDM optical communication system (Figures 1-4, especially Figure 4), the system comprising:

input means and output means for an optical signal (nodes 14 including transmitters 16 and receivers 18);

an optical fiber path 28 connecting signal-transmissively the input and output means (page 9, lines 34-36; page 10, lines 1-31);

wherein the optic signal is amplified by means of Raman amplification and the optical fiber path comprises at least one Raman amplifier (signal varying device 12 including Raman gain section 30; page 10, lines 32-38; page 11, lines 1-6; Figure 4 shows a particular version of device 12 in detail), further comprising WDM means (including polarization coupler 39 in Figure 4) for coupling at least two polarized pump radiation wavelengths (from pump lasers 32<sub>1</sub> and 32<sub>2</sub>; page 11, lines 29-38; page 12, lines 1-13) with wavelengths less than the signal radiation wavelength into the Raman amplifier (page 12, lines 31-33),

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wherein the polarization of one of the pump radiation wavelengths is maintained at a predetermined difference in polarization with respect to the polarization of the other pump radiation wavelength, wherein the polarization of the pump radiations of the lower part of the pump wavelength band is orthogonal with respect to that of the upper part (page 11, lines 35-38; page 12, lines 1-4; page 21, lines 12-20).

Examiner respectfully notes that the orthogonal pump radiation wavelengths disclosed by Grubb et al. inherently have a “predetermined difference in polarization” (since they are orthogonal to each other), and Grubb et al. discloses that this orthogonality is maintained using polarization combiner 39.

Examiner also respectfully notes that claim 1 only recites “at least two polarized pump radiation wavelengths” and therefore does not require more than two pump wavelengths. Grubb et al. disclose WDM means comprising polarization coupler 39 which maintains the polarization difference of two input pump wavelengths  $\lambda_{p1}$  and  $\lambda_{p2}$ .

Regarding claims 2 and 3, Grubb et al. disclose the Raman amplification is a distributed or localized Raman amplification (page 6, lines 14-18; page 7, lines 12-29).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grubb et al.

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Regarding claim 6, Grubb et al. disclose that the amplification is in the C-Band or L-Band (specifically, they disclose that the transmission signal wavelength range may be between 1520 nm to 1620 nm, which is well understood in the art as the C-Band and L-Band by definition; page 12, lines 31-33). They further disclose that the pump wavelengths corresponding to this C-Band or L-Band amplification may have a range between 1420 nm to 1520 nm (page 12, lines 31-33), but they do not specifically disclose that the pump wavelengths in the system as discussed above with regard to claim 1 may be 1427, 1439, 1450, or 1485 nm in particular. However, Grubb et al. disclose four pump wavelength values as an example with regard to their Figure 3 (1450, 1460, 1485, and 1495 nm; page 21, lines 12-20; note that these wavelength values include 1450 and 1485 as claimed in claim 6), and it would be well understood in the art that various specific pump wavelengths in the appropriate range disclosed by Grubb et al. may be used. It would have been obvious to a person of ordinary skill in the art to specifically have 1427, 1439, 1450, or 1485 nm as the pump wavelengths in the system disclosed by Grubb et al. as an engineering design choice of specific wavelength values. The claimed differences exist not as a result of an attempt by Applicants to solve an unknown problem but merely amount to the selection of expedients known as design choices to one of ordinary skill in the art. Again, Grubb et al. already disclose that the system may include pump wavelengths (as in the example from page 21, lines 12-20) within a range between 1420 nm to 1520 nm (page 12, lines 31-33).

#### ***Response to Arguments***

5. Applicants' arguments filed 11 May 2006 regarding claims 1-3 and 6 have been fully considered but they are not persuasive.

Regarding Applicants' arguments on page 6 of their response regarding plural pump wavelengths, although claim 1 recites the phrase "wherein the polarization of one of the pump radiation wavelengths is maintained at a predetermined difference in polarization with respect to the polarization of the other pump radiation wavelengths," Examiner respectfully notes that the claim only recites "WDM means for coupling at least two polarized pump radiation wavelengths." Therefore, the claim includes a system with only two polarized pump radiation wavelengths, wherein the limitation regarding "a predetermined difference in polarization" would be merely directed to a difference between those two wavelengths. The claim does not positively recite a system requiring at least three or more pump wavelengths.

Also, regarding Applicants' argument on page 5 regarding "the relative polarizations of the pump signals as they are present in the amplifying fiber 30" in the disclosure of Grubb et al., Examiner respectfully notes that Applicants' claim does not recite further details regarding the maintaining of a predetermined difference in polarization between the pump wavelengths in the claimed system beyond the recited "WDM means for coupling." Examiner respectfully maintains that Grubb et al. disclose WDM means comprising a polarization coupler 39 which maintains the polarization difference of two input pump wavelengths  $\lambda_{p1}$  and  $\lambda_{p2}$  as shown in Figure 4.

***Allowable Subject Matter***

6. Claims 7-13 are allowed.
7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including Grubb et al., does not specifically disclose or fairly suggest a WDM optical communication system including the particular combination of all the elements and limitations recited in claim 7, particularly wherein the pump signals include first, second,

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and third pump signals with the polarization and wavelength band characteristics specifically recited.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
CHRISTINA LEUNG  
PRIMARY EXAMINER